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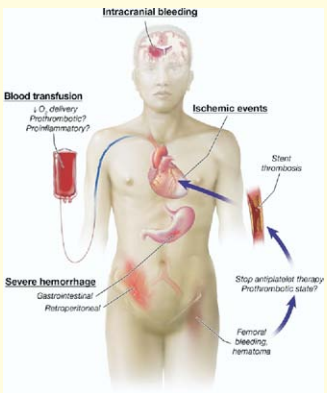
STATE-OF-THE-ART PAPER



Editorial Comment
Juan Carlos Kaski, Gillian W. Cockerill, p. 2036

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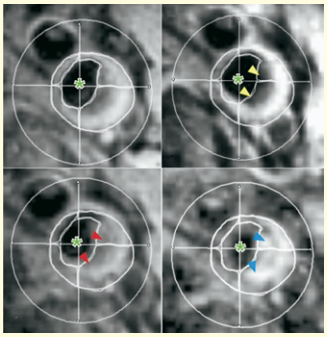
CLINICAL TRIAL

MRI Protocol Can Measure Atherosclerotic Inflammation 2039

Tjun Y. Tang, Simon P. S. Howarth, Sam R. Miller, Martin J. Graves, Andrew J. Patterson, Jean-Marie U-King-Im, Zhi Y. Li, Stewart R. Walsh, Andrew P. Brown, Peter J. Kirkpatrick, Elizabeth A. Warburton, Paul D. Hayes, Kevin Varty, Jonathan R. Boyle, Michael E. Gaunt, Andrew Zalewski, Jonathan H. Gillard



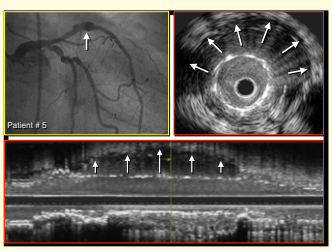
Preliminary studies indicate that ultrasmall superparamagnetic iron oxide (USPIO)-enhanced magnetic resonance imaging (MRI) can identify macrophage infiltration in atherosclerotic plaques and may be a surrogate marker of plaque inflammation. Tang and colleagues randomized 47 patients with carotid stenosis and baseline inflammation to either 10 or 80 mg of atorvastatin. High-dose atorvastatin produced a highly significant reduction from baseline in signal intensity, while there was no change with the low dose. Aggressive lipid lowering with atorvastatin may produce significant reductions in atherosclerotic inflammation that can be quantified with USPIO-enhanced MRI.

Editorial Comment
Zahi A. Fayad, Louai Razzouk, Karen C. Briley-Saebo, Venkatesh Mani, p. 2051

INTERVENTIONAL CARDIOLOGY

Frequency and Complications of Coronary Aneurysms After DES 2053

Fernando Alfonso, Maria-José Pérez-Vizcayno, Miguel Ruiz, Alfonso Suárez, Miguel Cazares, Rosana Hernández, Javier Escaned, Camino Bañuelos, Pilar Jiménez-Quevedo, Carlos Macaya

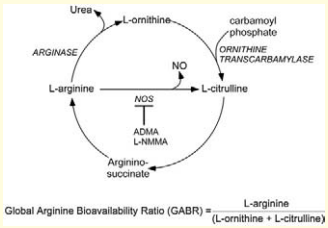


Alfonso and colleagues reviewed follow-up angiograms from almost 1,200 patients with previous drug-eluting stent (DES) implantation to identify patients developing coronary aneurysms (CANs). CAN was defined as a localized angiographic dilation of the vessel lumen at late angiography that was not present immediately after the procedure and that was not caused by a dissection or contained perforation. Fifteen patients (1.25%) developed CANs. The 1-year event-free survival was only 49% and was related to CAN size on intravascular ultrasound (IVUS). In 2 patients, CANs disappeared at repeated late angiography, and IVUS demonstrated abluminal CAN thrombosis. After DES implantation, CAN may develop and may increase the risk of stent thrombosis.

CARDIOVASCULAR RISK

Novel Method for Measuring Arginine Bioavailability Confirms Link to CAD 2061

W. H. Wilson Tang, Zeneng Wang, Leslie Cho, Danielle M. Brennan, Stanley L. Hazen



Nitric oxide (NO) is synthesized from arginine in a multistep reaction. Tang and colleagues hypothesized that the "bioavailability" of arginine may limit the production of NO. They developed a "global arginine bioavailability ratio" (GABR), which measures both arginine and its major catabolic products (ornithine and citrulline). GABR was calculated in over 1,000 patients undergoing elective angiography. After adjustment for cardiac risk factors, low GABR levels predicted both the prevalence of coronary artery disease (CAD) and 3-year risk of major adverse cardiovascular events. Arginine levels were not predictive. These results suggest that GABR is a comprehensive measure of reduced NO synthetic capacity.

Editorial Comment
Richard I. Levin, p. 2068

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HEART FAILURE

Adiponectin Secretion Enhanced by Natriuretic Peptides **2070**

Osamu Tsukamoto, Masashi Fujita, Mahoto Kato, Satoru Yamazaki, Yoshihiro Asano, Akiko Ogai, Hidetoshi Okazaki, Mitsutoshi Asai, Yoko Nagamachi, Norikazu Maeda, Yasunori Shintani, Tetsuo Minamino, Masanori Asakura, Ichiro Kishimoto, Tohru Funahashi, Hitonobu Tomoike, Masafumi Kitakaze

Adiponectin is a cytokine derived from adipose tissue that may be cardioprotective. Tsukamoto and colleagues investigated the correlation between adiponectin and the natriuretic peptides. Both atrial natriuretic peptide (ANP) and brain natriuretic peptide increased the expression and secretion of adiponectin from adipocytes grown in culture. Thirty patients with CHF were then randomized to a 4-day infusion of ANP or placebo. ANP infusion increased circulating adiponectin levels. Natriuretic peptides enhance adiponectin production by human adipocytes in vitro and in vivo.

Editorial Comment
Lisa C. Costello-Boerrigter, John C. Burnett, Jr, p. 2078

YEAR IN CARDIOLOGY SERIES

YEAR IN CARDIOLOGY SERIES

The Year in Interventional Cardiology **2080**

Simon R. Dixon, Cindy L. Grines, William W. O'Neill

Dixon and colleagues provide readers with a review of major scientific work published in the field of interventional cardiology in 2008, including late-breaking trials presented at several conferences. This paper provides a broad overview of the field for general cardiologists, as well as a framework for more detailed study for those with a specific interest in interventional cardiology. Some of the highlights include synopses and commentary for controversial issues including the risk of stent thrombosis, periprocedural anticoagulation, and surgical compared with percutaneous revascularization.